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Interestingness and Memory for Stories

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Abstract

Two experiments investigated the effects of the number of interesting events in a story on memory for that story. The results differed depending on whether or not the story followed a stereotypical script. For script-based stories, adding interesting events spaced throughout the stories decreased the stories' memorability. However, for non-script-based stories, adding a few interesting events aided memory for the stories, but adding too many decreased memory. These results were interpreted in terms of a limited resource model of story understanding that focusses processing on interesting events.

Introduction

One of the major problem areas for theories of language understanding is how to determine which inferences are important to make while understanding a story and which inferences are not important to make. When inferencing is left uncontrolled, a combinatorial explosion of inferences is often the result.

Schank and Abelson (1977) proposed a group of higher level knowledge structures (scripts, plans, goals and themes) that constrain inferencing to only the most relevant paths, but Schank (1979) concluded that even more constraint was needed. In particular, he proposed that interestingness be used to guide inferencing: i.e., that the inferencing process should concentrate on the most interesting events in a narrative. Schank argued that an interestingness value could be assigned to events in narratives using the criteria that some events are inherently interesting (e.g., sex, death and violence are always interesting) and other events are interesting in certain contexts (e.g., taking off one's clothes in public is interesting but not in private). These interestingness values can then be used to focus the inferencing processes on only the most interesting events in a narrative.

Lehnert (1979) extended this analysis by adding the notion of resource limitations and making predictions for the recall of stories. One of the predictions was that adding interesting events to a story will improve its memorability because they provide markers around which events in the story can be organized. However, because processing resources are limited, adding interesting events to a story will only aid memory up to a certain point. If a story contains too many interesting events then there will be too many high priority events competing for the limited processing resources, so this "overload" condition should also be detrimental to recall of the story. We conducted two experiments to test these predictions.

Number of Interesting Events Experiment

In this experiment we explicitly tested the prediction that as the number of interesting events in a story increased, the memory for the story would first be aided and then be hurt. In particular, we designed four stories of 20 events each such that up to nine unrelated but inherently interesting events could be substituted for uninteresting events with minimal change in the sentences. For example, one story about a visit to a library contained the following two uninteresting events

On her way Mary passed a friend
and remembered she was in her class.

The first sentence here can be made interesting by merely substituting "prostitute" for "friend."

Two of these four stories were based on stereotypical scripts (visiting the library and eating at a restaurant) while the other two were not (walking in the park and visiting a private club). We wrote four versions of each of these stories. These versions differed only in the number of interesting events. One version had 0, another had 3, a third had 6 and the final one 9. These interesting events were distributed evenly throughout each story version. Our main interest was in how this number of interesting events would affect the subjects' recall of the stories. We gave the four stories (one in each version) to 32 subjects to read (8 subjects saw a given version of a given story), then after a 15 minute intervening task the subjects were given the story titles and asked to recall as much as they could from the stories. These recall protocols were then scored for the gist of the events in the stories.

Table 1 gives the percentage of the story statements recalled for each version of the stories.

Table 1

Type of Story	Percent of Story Statements Recalled in First Experiment			
	Number of Interesting Events			
	0	3	6	9
Script	65	51	52	56
Non-script	53	59	49	42

The results were quite different for the different kinds of story. In particular, the non-script stories followed the predicted pattern: i.e., adding 3 interesting events improved recall but adding more hurt recall. However, recall of the script stories was best with 0 interesting events, second best with 9, and worse with the intermediate values of 3 and 6.

Our interpretation of these results is that in the script-based stories there is already a story organization (namely, the script), so adding interesting events is harmful to recall because the existing organization is disrupted. In the 0 interesting events condition, subjects can reconstruct a script-based story during recall by merely remembering that it was a typical implementation of the script (e.g., a typical library story). However, adding interesting events makes straight reconstruction no longer possible. The slight upturn at 9 interesting events might occur because by this time the subjects have completely abandoned trying to use the script as a reconstruction aid and merely focused on the interesting events as memory organizers.

With the non-script stories, on the other hand, the results were as predicted because there was no strong preexisting organization in the interesting events condition. Specifically, adding 3 interesting events aided recall, but the 6 and 9 events conditions led to worse recall because of an overabundance of interesting events.

Massed and Spaced Interesting Events Experiment

In this experiment we explicitly tested the prediction from Lehnert's limited resource model that it is the density of interesting events rather than the absolute number that determines recall. In the first experiment, the number of interesting events in the story was confounded with the density of interesting events. In this experiment we used the same basic stories but had only the 0 and 3 interesting events conditions. Now, however, we varied density independently of number by having the interesting events either be located adjacent to one another (the massed condition) or be evenly spaced throughout the story as before (the spaced condition). The procedure was the same as in the first experiment with 24 subjects this time (but still 8 per group).

Table 2 gives the percentage of the story statements recalled in the versions of the stories.

Table 2

Percent of Story Statements Recalled in Second Experiment

Type of Story	Number of Interesting Events		
	0	3 Spaced	3 Massed
Script	55	58	64
Non-script	50	55	46

As with the first experiment, the results were quite different for the two types of stories. With the script stories, there was essentially no difference between the 0- and 3-spaced conditions, but the 3-massed condition led to better recall of the story. With the non-script stories, on the other hand, the results confirmed the expectation that the spaced interesting events would improve recall, while the massed ones would decrease recall.

Our interpretation of these results is that with the script-based stories, having the disruptive interesting events massed allows the reader to store them in memory as separate units which is harder to do if the interesting events are spaced throughout the story. Thus the massed condition facilitates a memory representation like the one proposed by Graesser, Gordon, and Sawyer (1979) --

namely, remembering the story as a script plus a list of deviations.

With the non-script stories, on the other hand, such a representation is not possible because there are no organizing scripts. In these stories, the interesting events provide the organization for the story and the construction of this organization during reading is facilitated by having the interesting events spaced throughout the story. If the interesting events are massed, the limited resources available for processing are "locally overloaded" so the memory for a story with massed interesting events is even worse than one with no interesting events.

Conclusions

The non-script stories conformed to our expectations that adding a few interesting events spaced throughout a story would increase the story's memorability, but that adding too many interesting events or having them massed together would decrease the story's memorability. The results were different, however, if the stories were highly stereotyped, script-based stories. In particular, adding interesting events to script-based stories disrupts the existing script organization and hence led to less memorable stories unless these disruptive events were massed together in the story. Thus a writer can "spice up" a text by adding inherently interesting statements, but this procedure will increase the reader's memory only if the text was poorly organized originally.

References

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